

EMC Test Equipment Catalog



- Electrostatic Discharge Simulator
- Impulse Noise Simulator
- Fast Transient / Burst Simulator
- Lightning Surge Simulator
- Voltage Dip & Swell Simulator
- Damped Oscillatory Wave Simulator
- Emission Measurement System
- Broadband Sleeve Antenna
- TEM Horn Antenna
- EMC Test Systems for Automotive Electronics

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www.noiseken.com

Model : NKU07M32G / NKU07M60G

Broadband Sleeve Antenna

Broadband sleeve antenna has been developed for efficient immunity testing against hand-held transmitters and cellular phones. Many pieces of spot frequency antennas had to be used in turn thus far. This new Broadband sleeve antenna is a single antenna solution eliminating the need for antenna changes and dramatically reducing the test time. Furthermore, this antenna with its small-size and lightWeight properties and a flexible handle is suitable for testing in narrow spaces.

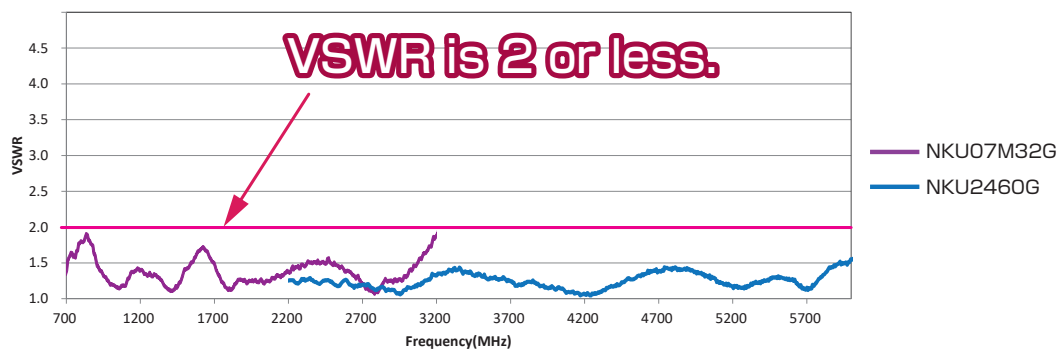
- A wide frequency range eliminating the need for antenna changes
- 30 W maximum power input allows high field strengths
- High efficiency due to a low VSWR and high gain
- Suitable for broadband digital modulation thanks to a good VSWR flatness
- Small, light-Weight and flat antenna easy to use in narrow spaces
- Easy handling with a flexible arm
- A wide radiation pattern makes directivity of the fields no longer an issue



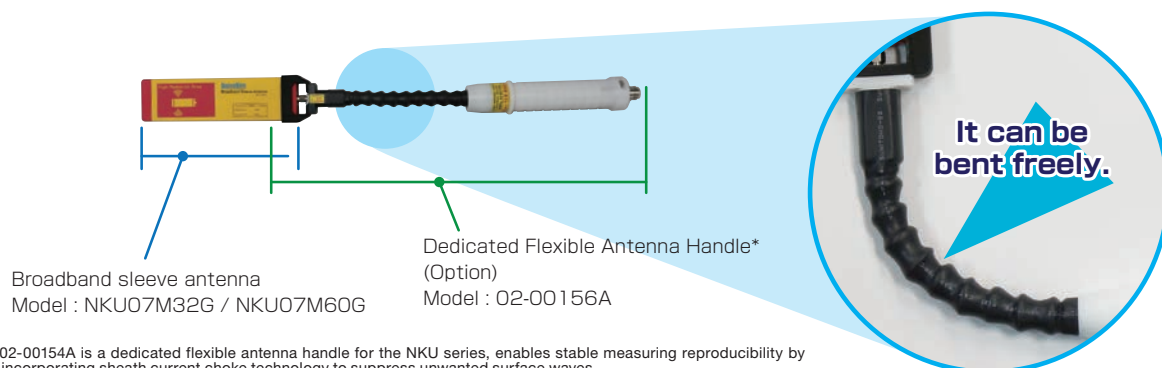
Specification

Model	NKU07M32G	NKU2460G
Frequency range	700 MHz ~ 3.2 GHz	2.4 GHz ~ 6 GHz
VSWR	≤ 2	
Maximum power input	20 W (continuous) 30 W (continuous 10 minutes)	10 W (CW)
Input impedance	50 Ω	
Connector	SMA(J)	
Dimensions	W50 × D8 × H186 mm (projection excluded)	W35 × D10 × H108 mm (projection excluded)
Weight	73.5g	20 g

VSWR



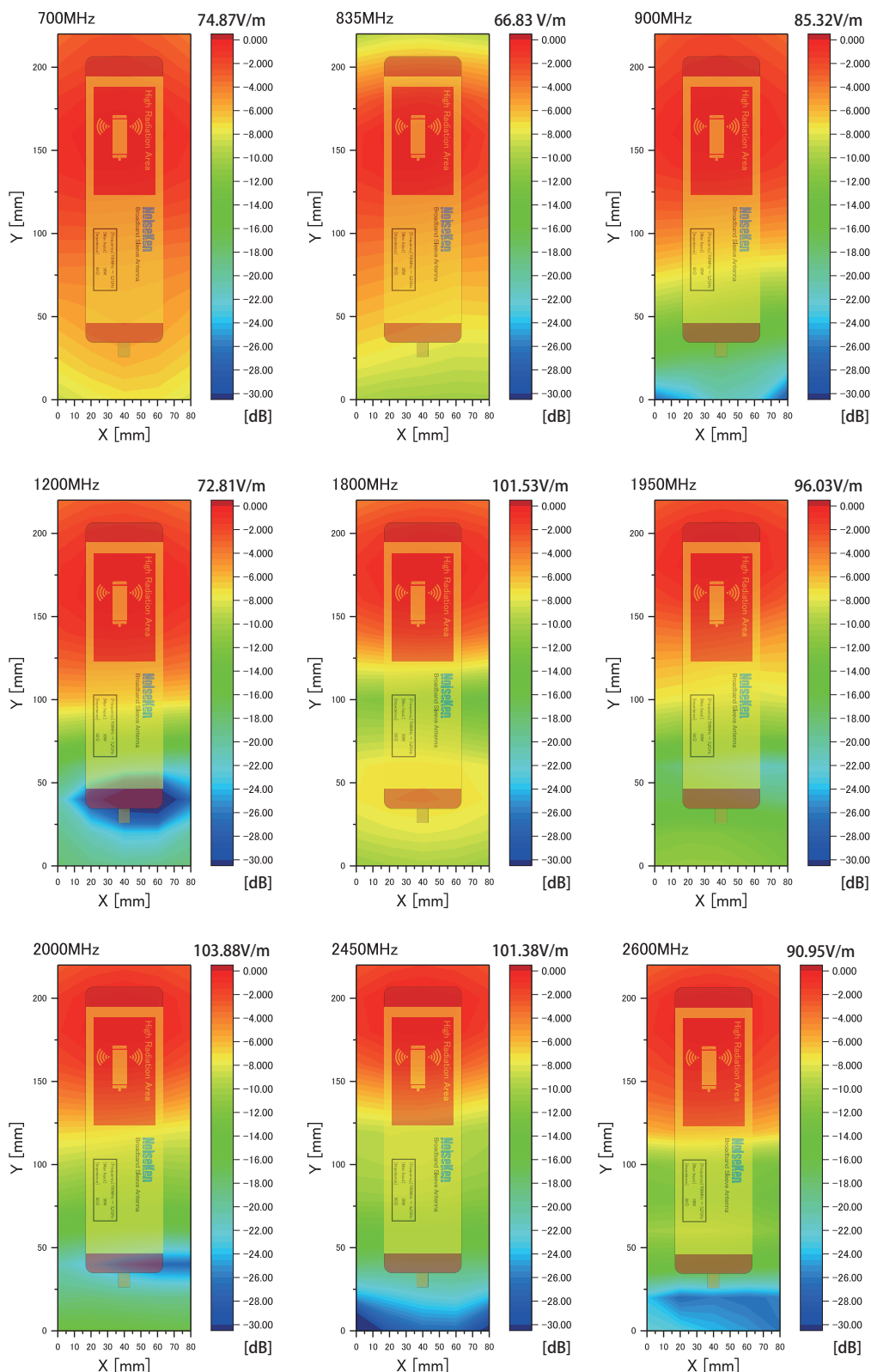
Antenna and Dedicated Flexible Antenna Handle



NKU07M32G / NKU07M60G

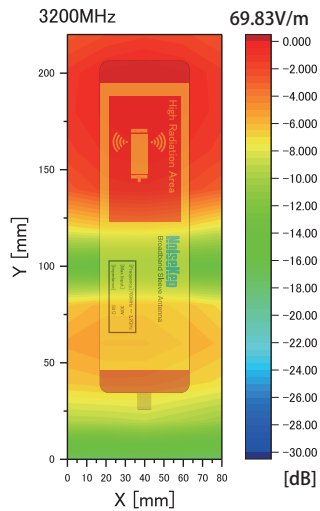
Specifications

■ Near field distribution characteristics(NKU07M32G)



NKU07M32G / NKU07M60G

Specifications

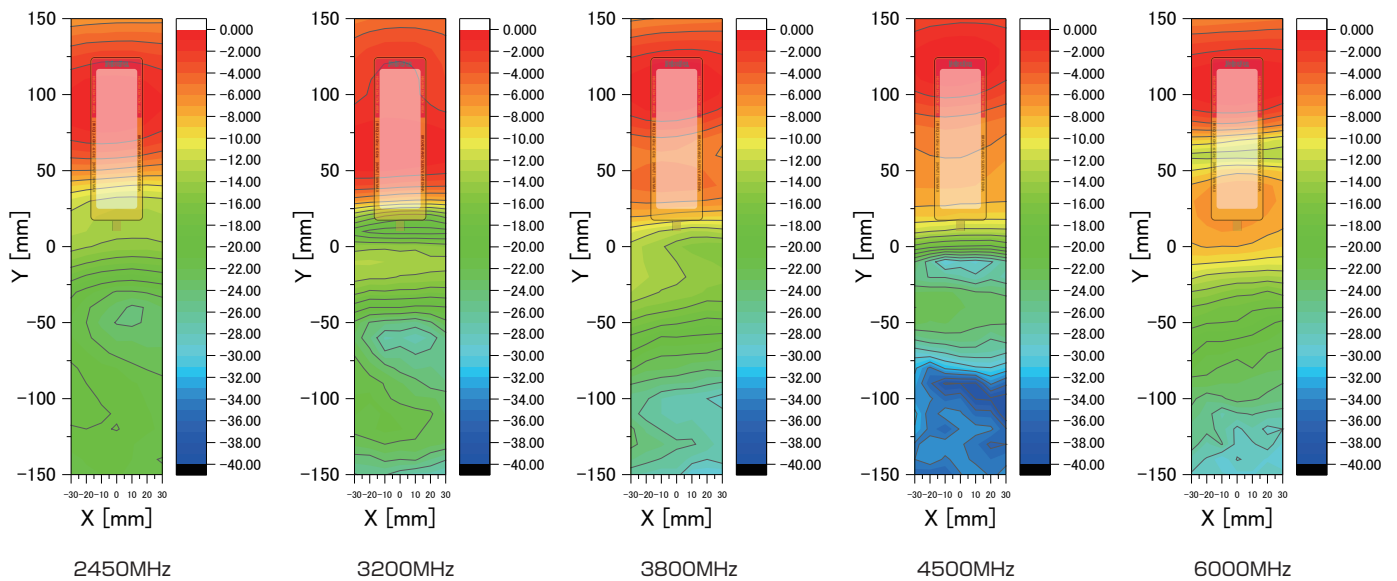


Electric field direction : y-axis (Single axis)

Input power / distance : 1W/50mm

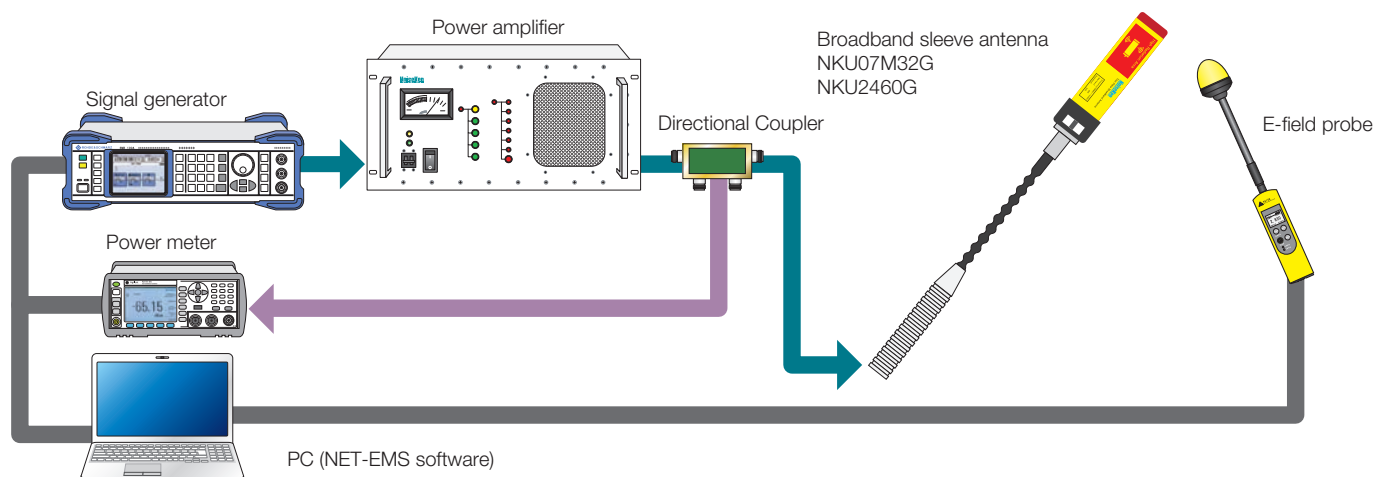
The electric field strength is a reference value.

■ Near field distribution characteristics(NKU2460G)



NKU07M32G / NKU07M60G

System configuration example

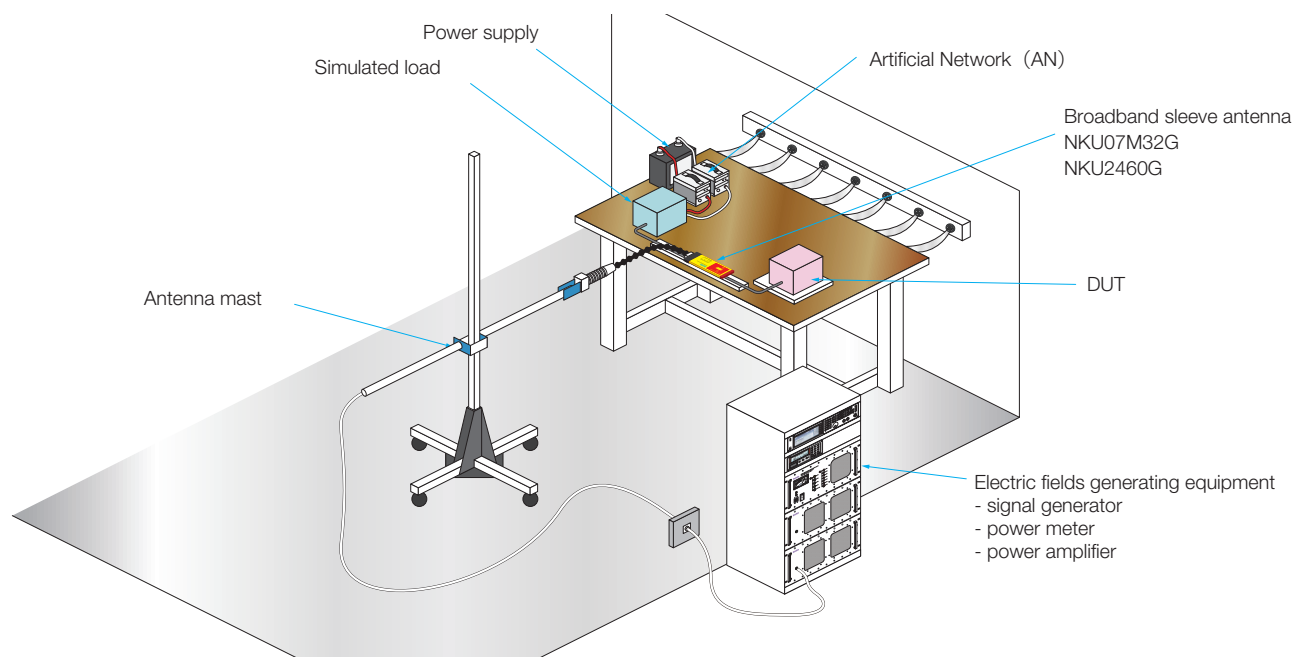


Application

In-vehicle testing



Testing for automotive electronics



THA-380M60G

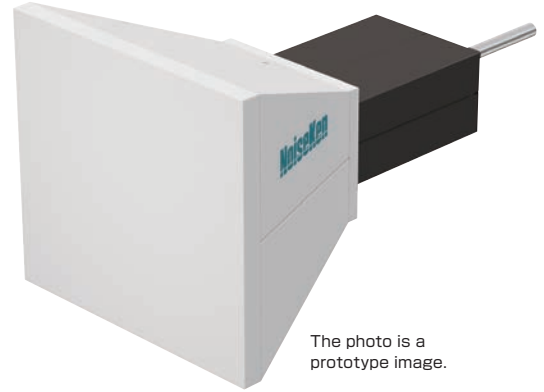
TEM Horn Antenna

EMC Testing in the 5G/IoT Era!

The TEM horn antenna is an antenna for conducting a close proximity radiation immunity evaluation test (near electromagnetic field immunity test) of electromagnetic waves radiated from various wireless transmitters such as mobile phones.

In the future, the close proximity radiation immunity evaluation test using the TEM horn antenna is expected to expand to various product standards such as medical equipment (IEC 60601-1-2) and multimedia equipment (CISPR 35).

NoiseKen's TEM horn antenna has a wide band, low VSWR, and wide electric field uniformity offers an ideal solution for an efficient close proximity radiation immunity test.



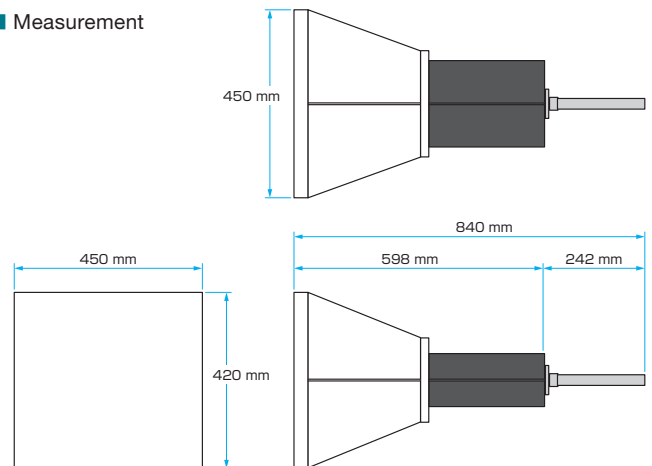
The photo is a prototype image.

- A TEM horn antenna compliant with IEC 61000-4-39 Ed.1.
- Test without changing the antenna in the frequency range of 380 MHz to 6 GHz.
- Low VSWR and high GAIN enable efficient electromagnetic wave radiation.
- Wide field uniformity reduces the number of times of movement of the antenna when radiating the EUT.
- Since the maximum point of the near electric field distribution for each frequency is at the center, enables radiation on the EUT based on the axis of the antenna. Hence, significantly simplifies test point alignment.

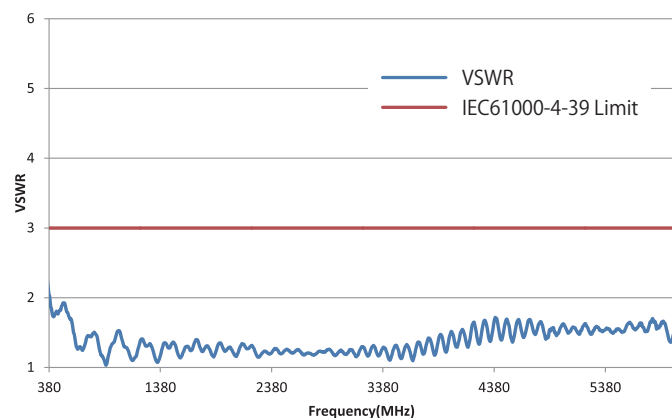
Specification

Item	Specification
Compliant standard	IEC 61000-4-39
Frequency range	380 MHz ~ 6 GHz
VSWR	3 and below *Refer to figure (VSWR)
Undetermined power	380 MHz ~ 750 MHz : 180 W MAX 750 MHz ~ 1.7 GHz : 100 W MAX 1.7 GHz ~ 6 GHz : 65 W MAX
Electric field uniform area	See figure (electric field distribution characteristics)
Gain	Refer to the figure (Power required to generate 300V/m (typ) (at 0.1m))
Impedance (typ)	50 Ω
Connector	N (J)
Dimensions	W450 mm × H420 mm × D598 mm *Refer to diagram (measurement) for details.
Weight	approx. 3.2 kgs

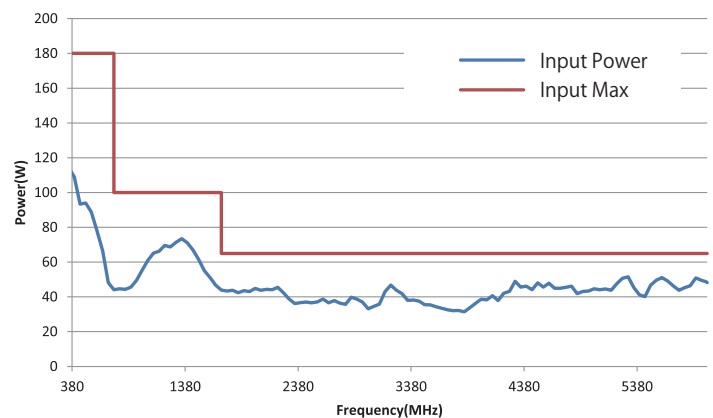
Measurement



VSWR

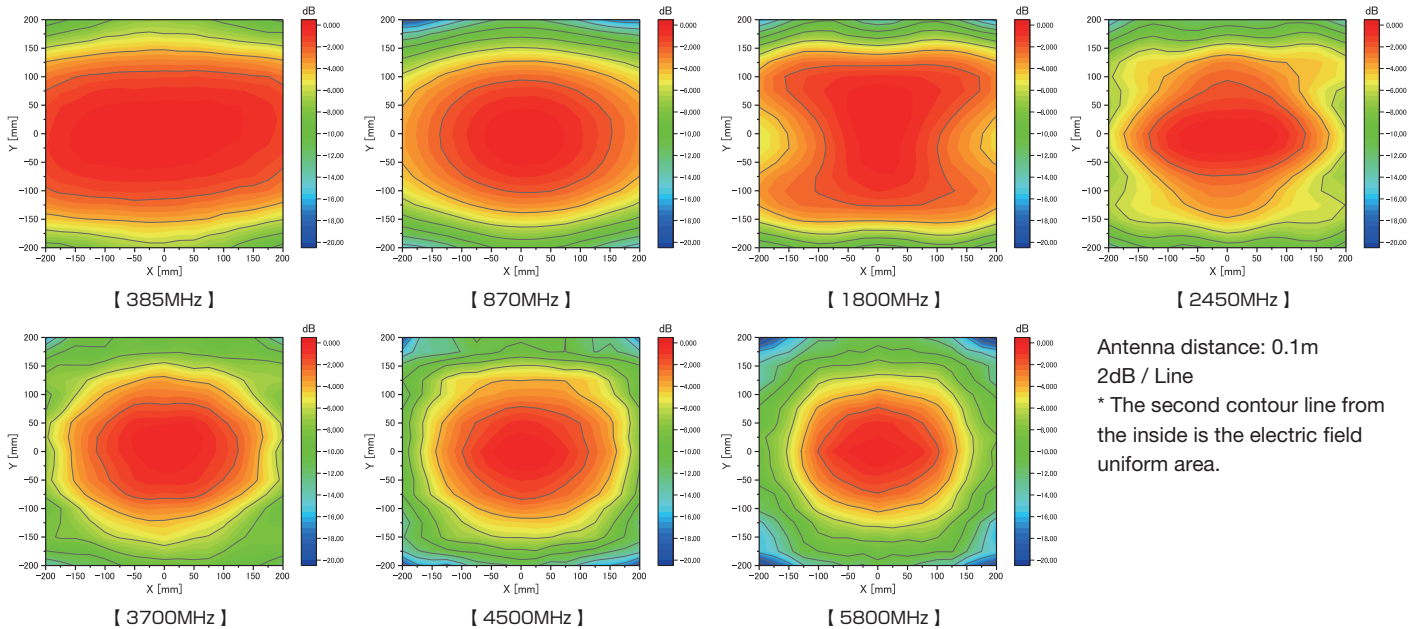


Power required for generating 300 V/m (typ) (at 0.1m)



TEM horn antenna

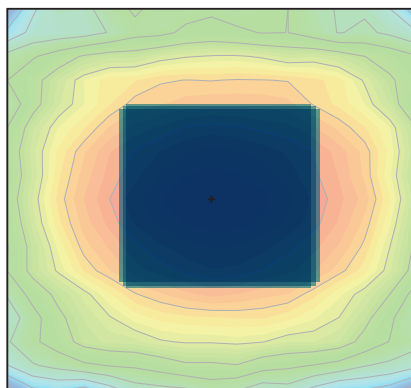
Electric field distribution characteristics



The electric field distribution characteristics are ymmetrical vertically and horizontally.

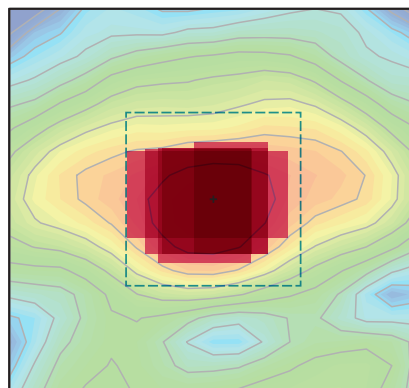
About securing a uniform electric field

In the actual test, the radiation position is controlled by creating a quadrangle inscribed on the uniform electric field surface. Therefore, there is a symmetric electric field distribution characteristic that has a maximum point in the center and can create a large quadrangle.



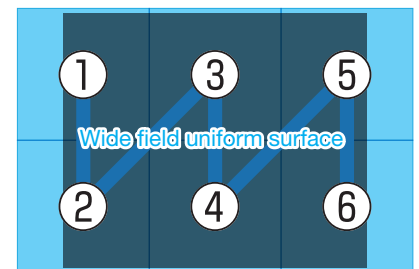
When the uniform electric field is symmetrical

Since the electric field uniform surface is symmetrical vertically and horizontally, a wide electric field uniform surface can be obtained based on the antenna center axis.

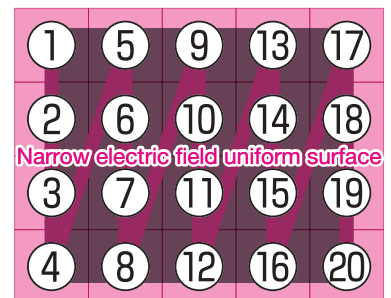


When there is distortion on the uniform electric field surface

If the electric field uniform surface is distorted, it is difficult to secure a wide electric field uniform surface with respect to the center axis of the antenna. (It becomes a narrow electric field uniform surface.)



Less moves (Short test time)



More moves (Long test time)

Image of the difference in the number of antenna movements

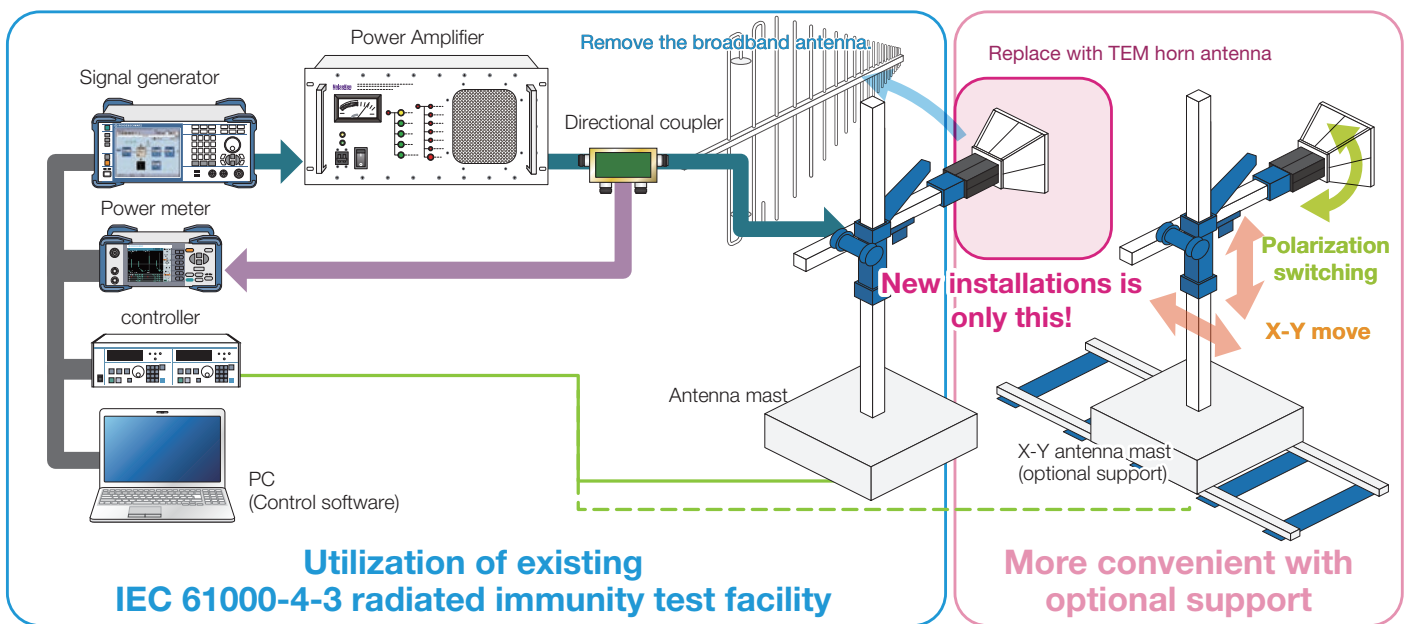
Widely symmetrical electric field distribution characteristics can be expected to shorten the test time.

TEM horn antenna

System configuration image

The system configuration is a signal generator that is a signal source of noise, a power amplifier that amplifies the signal, a TEM horn antenna that radiates radio waves, a power meter that confirms the power supplied to the TEM horn antenna, and software to control these series of devices.

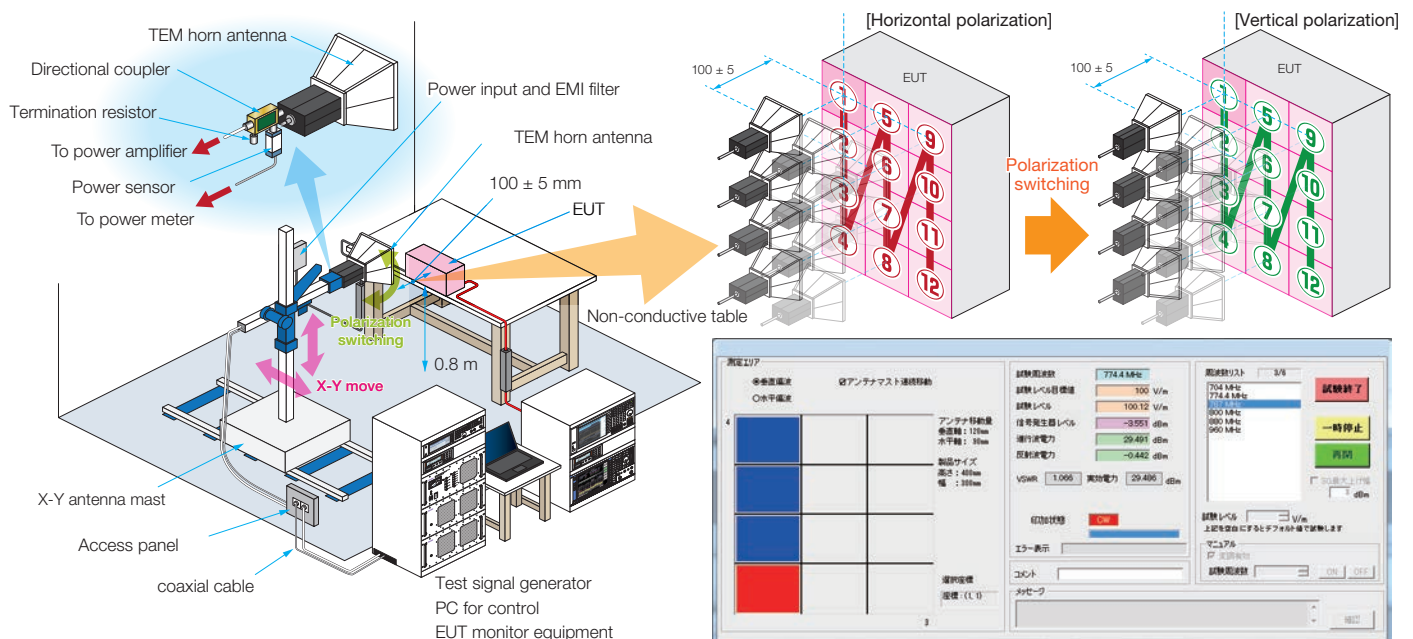
The basic system configuration is almost the same as the IEC 61000-4-3 radiated immunity test, and in order to perform the proximity radiation test, the system can construct simply by changing the antenna from the conventional wideband antenna to the TEM horn antenna. (Antenna position control (X-Y control) is available as an option.)



A system with dedicated software can build.

Test image using dedicated software (X-Y position movement and polarization switching control)

In the test, the distance between the DUT and the antenna is set to 100 mm, and all surfaces of the DUT are radiated with vertically polarized waves and horizontally polarized waves. By using dedicated software to automate antenna movement and radio wave radiation, you can further reduce test time and labor.

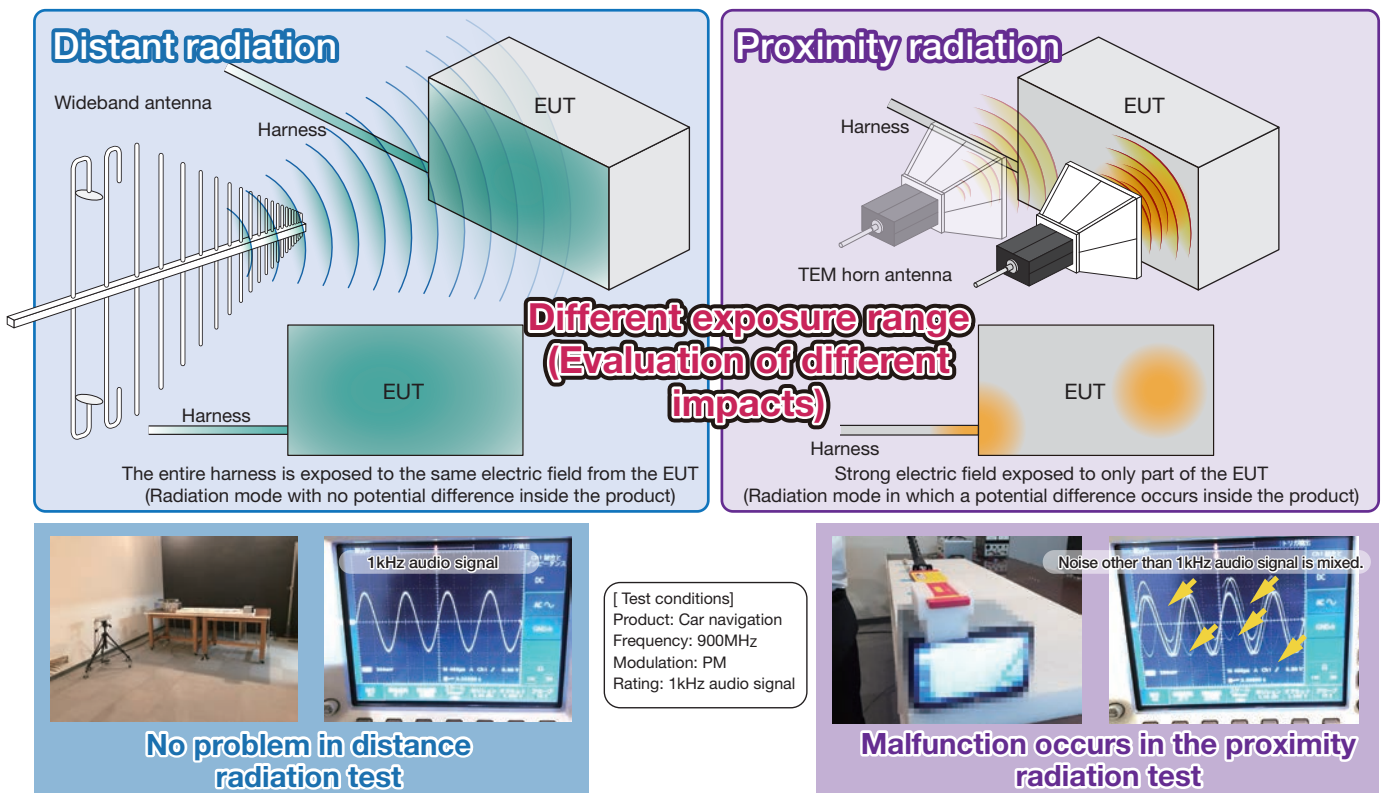
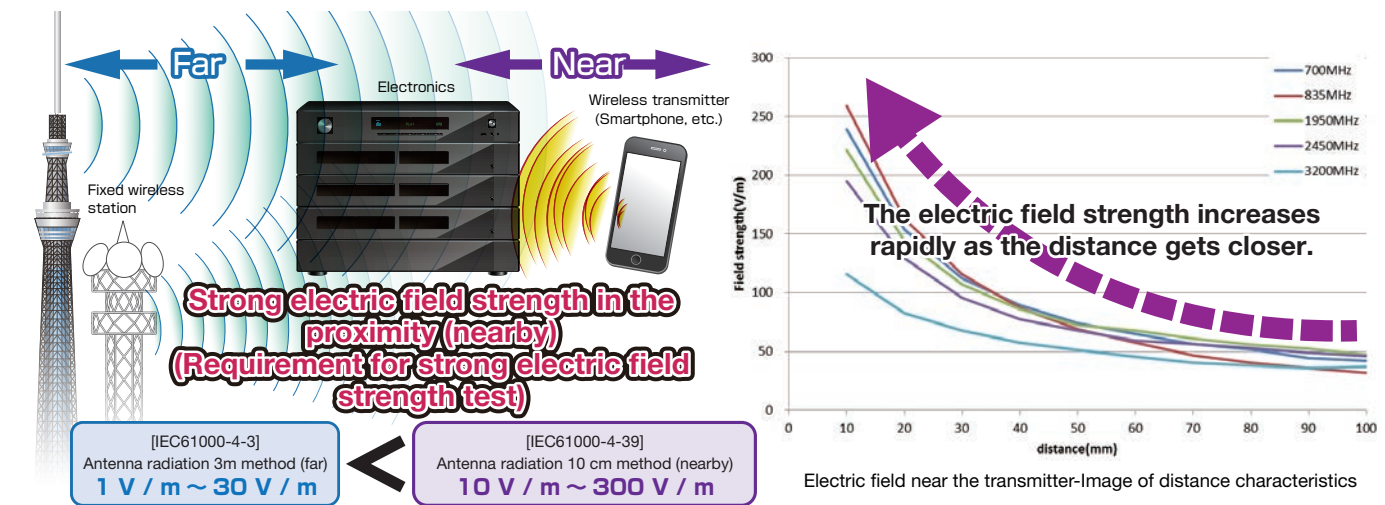


*Dedicated software is currently under development. Please contact us for details.

TEM horn antenna

The need for The need for proximity radiation testing

With the advent of new communication technologies and infrastructures such as IoT and 5 G, in addition to smartphones and wireless LANs, which have become extremely popular in recent years, a world is emerging in which many electronic devices are connected by wireless communication. On the other hand, from the perspective of EMC, the number of cases where these wireless transmitters are in close proximity to other electronic devices is increasing, and there is concern about the risk of electromagnetic interference. Against this background, IEC 61000-4-39, an electromagnetic immunity test method for nearby transmitters, was issued. Since the electromagnetic field generated by a nearby transmitter is extremely strong and has the characteristics of the near field, it is necessary to perform it in addition to the conventional radiated immunity test that radiates from a distance. The basic standard, IEC 61000-4-39, defines the antenna to be used, and it is necessary to use a TEM horn antenna in the frequency band of smartphones, mobile phones, and 5G(sub6).



[Note]

This test is the result of the test conducted in accordance with the proximity radiation immunity test standard (ISO 11452-9) for automobile equipment. Vehicles and in-vehicle devices have already been tested for distance radiation and proximity radiation.

Because the test conditions are different, the results are different.